

REMARKS:

- 1) The Examiner's attention is directed to a further Information Disclosure Statement that was filed on July 9, 2003 and was discussed briefly in a telephone interview with the Examiner on July 17, 2003. The Examiner is respectfully requested to consider the cited reference and to return an initialed, signed and dated acknowledgment copy of the Form PTO-1449 of July 9, 2003 together with the next official communication.

- 2) The claims have been amended as follows.

Claim 16 has been amended to recite that the nickel-tungsten alloy contains more than 20% by weight and less than 44% by weight of tungsten. This limitation is similar to the tungsten content range recited in independent claims 1 and 10.

New claims 17 to 22 have been added.

The more narrowly limited tungsten content range of the nickel-tungsten alloy recited in new claims 17 and 22 is similar to limitations previously added to claim 10. This is merely a narrower limitation of and within the originally claimed range of tungsten content. The full range of tungsten content is supported by the original disclosure (see e.g. page 3, line 26; page 4, line 8 to page 5, line 3; table 1 on page 8; table 2 on page 9; etc.). Accordingly, the presently claimed narrower limited portion of the originally disclosed full range does not introduce any new matter.

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Claim 18 recites the upper limit of the tungsten content similar to claims 9 and 11, but now depending from independent claim 16 through claim 17.

New claims 19, 20 and 21 recite the layer thickness limitation of original claim 4, but respectively depending from claims 18, 9 and 11.

As all of the claim amendments and new claims are supported in the original disclosure as discussed above, the present amendments and new claims do not introduce any new matter. Entry and consideration thereof are respectfully requested.

- 3) Referring to section 5 on page 4 of the Office Action, the allowance of claims 12 to 15 is appreciated. Those claims have been maintained without amendment and should still stand allowed.
- 4) Referring to section 6 on page 4 of the Office Action, the indication of allowable subject matter in claims 5 to 8 is appreciated. Moreover, for the reasons that will be discussed below, it is respectfully submitted that independent claim 1, from which claims 5 to 8 depend, is itself already patentably distinguishable over the prior art. In any event, claims 5 to 8 have been maintained without amendment and should still be seen as containing allowable subject matter.
- 5) Referring to section 2 on page 2 of the Office Action, the rejection of claims 1 and 9 to 11 as obvious over JP 58-212840 (JP '840) is respectfully traversed.

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Independent claims 1 and 10 affected by this rejection both recite that the nickel-tungsten alloy contains more than 20% by weight and less than 44% by weight of tungsten.

Contrary to the present invention, JP '840 discloses a nickel-tungsten alloy containing from 2% up to 20% by weight of tungsten. Thus, there is no direct overlap or contact of the uppermost limit of tungsten according to the JP '840 reference and the lowermost limit of tungsten according to present claims 1 and 10. As admitted by the Examiner, the JP '840 reference does not disclose a coating layer of nickel-tungsten alloy containing more than 20 wt.% of tungsten.

The Examiner's assertion that it would have been obvious to a person of ordinary skill in the art to "provide a coating layer with appropriate composition of tungsten to improve the performance of the mold surface" is respectfully traversed because it is legally and factually improper.

Because the prior art range and the claimed inventive range of tungsten content do not overlap or touch, there is no direct prima facie case of obviousness (see M.P.E.P. §2114.05.I pointing out that a prima facie case of obviousness exists when claimed ranges do overlap or lie within prior art ranges).

When there is no overlap between a claimed range and a prior art range, the Examiner can establish a prima facie case of obviousness by demonstrating that a person of ordinary skill in the art would have expected the different compositions in the non-overlapping ranges to have the same properties. In the present case, that does not apply, because the prior art reference expressly limits the range to values below the

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presently claimed range and would not have given a suggestion or expectation of having the same properties outside of the disclosed limited range (in this regard also see M.P.E.P. §2114.05). The Examiner has shown no prior art disclosure or reasoning to establish that a person of ordinary skill in the art would have expected good results from a nickel-tungsten alloy coating layer having the presently claimed composition, which has a higher tungsten content than the disclosed prior art tungsten content range. A person of ordinary skill in the art would have had no motivation to stray outside of the limited range disclosed by JP '840, namely from 2 to 20 wt.% of tungsten.

The Examiner's assertion that "*determination of optimum values of cause effective variables ... is within the skill of one practicing in the art*" is a legally correct statement, but it does not apply to the present case. Namely, the Examiner has shown no prior art teachings or suggestions to establish that the tungsten content in a coating layer as presently claimed is a cause-effective variable that can be optimized for achieving a particular intended cause or purpose.

In this regard, see M.P.E.P. §2144.05.II.B making clear that "a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation". Also see the In re Antonie case at 195 USPQ 6 (CCPA 1977) cited there. When the prior art did not recognize or suggest that a particular parameter can be varied or optimized to achieve a particular intended result, then the

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variation or optimization of this parameter would not have been obvious or mere routine experimentation.

The Examiner's cited case, In re Boesch 205 USPQ 215 (CCPA 1980), is not applicable to the present case and the present facts. The In re Boesch case involved a claimed alloy composition of which all component ranges overlapped the prior art ranges disclosed in the prior art references. The Court's opinion makes clear that the prima facie case of obviousness involves the fact that "both (prior art references) disclose alloys having compositional limits overlapping those of the claimed alloys" and "each of the ranges of constituents in appellant's claimed alloys overlaps ranges disclosed by (prior art references)" (205 USPQ at 218, emphasis added).

The further issue in In re Boesch was whether varying a certain variable (the average electron vacancy concentration per atom in the matrix of the alloy) within the prior art ranges would have been obvious as a mere optimization of a result-effective variable. The Court found that the prior art actually taught that this parameter could be varied to achieve results similar as claimed in the application, and therefore this parameter was a result-effective variable, of which the optimization did not overcome the prima facie case of obviousness.

Quite contrary to the In re Boesch case, the present invention involves a compositional range with absolutely no overlap with the prior art range. Also, there is absolutely no prior art suggestion that varying the tungsten content above the upper limit of the prior art range would have optimized any

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variable to achieve any intended result. Therefore, the Examiner's assertion is legally and factually improper, and does not establish a prima facie case of obviousness.

Moreover, the JP '840 reference teaches away from the presently claimed higher range of tungsten content, by expressly limiting the tungsten content to a maximum of 20 wt%. As pointed out in the M.P.E.P. "A prima facie case of obviousness may also be rebutted by showing that the art, in any material respect, teaches away from the claimed invention" (MPEP §2144.05.III). In the present case, the pertinent prior art, namely JP '840, teaches that the maximum amount of tungsten should be limited to not more than 20 wt.%. That is directly contrary to the present invention, which expressly requires more than 20% of tungsten. Thus, any prima facie case of obviousness that may have been established is overcome by the express contrary disclosure of the prior art reference.

It seems the only suggestion or motivation for varying the tungsten content out of the disclosed prior art range and into the presently claimed inventive range comes from the Examiner's hindsight understanding and reconstruction of the present invention. It is not proper to evaluate the situation from the point of view knowing what the invention is and then saying "Oh, that's obvious", but rather the Examiner must demonstrate a suggestion or motivation in the prior art (without any knowledge of the invention) at the time the invention was made, that a person of ordinary skill would have proceeded with a tungsten content out of the prior art range and in the presently claimed range.

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For the above reasons, the Examiner is respectfully requested to withdraw the rejection of claims 1 and 9 to 11 as obvious over JP '840.

- 6) Referring to section 3 on pages 2 to 3 of the Office Action, the rejection of claims 1, 4 and 10 as obvious over JP 10-202698 (JP '698) is respectfully traversed.

The independent claims 1 and 10 affected by this rejection both recite that the nickel-tungsten alloy contains more than 20% by weight and less than 44% by weight of tungsten.

Directly contrary to the present invention, JP '698 discloses a coating layer of nickel-tungsten alloy with at least 44% and up to 60% by weight of tungsten. Thus, there is no overlap between the presently claimed range and the prior art range of tungsten content. As admitted by the Examiner, JP '698 does not disclose that the coating layer contains less than 44 wt.% of tungsten.

For similar reasons as discussed above in connection with the rejection applying JP '840, the Examiner's asserted position regarding obviousness of the invention in view of JP '698 is legally and factually improper.

Since the prior art range and the claimed range do not overlap, there is no immediate or direct prima facie case of obviousness. Without an overlapping range, the Examiner would have had to demonstrate that a person of ordinary skill in the art would have expected the claimed inventive composition (outside of the prior art range) to have had the same properties. The Examiner has shown no prior art teachings to establish this.

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Also as discussed above, there are no prior art teachings that show the tungsten content to be a result-effective variable which can be optimized to achieve some intended result or purpose outside of the disclosed range of tungsten content. Thus, the tungsten content is not a result-effective variable and cannot be "optimized" to obtain the present claimed range in an obvious manner by mere routine experimentation (see M.P.E.P. §2144.05.II.B). Thus, the Examiner has not established a prima facie case of obviousness.

Moreover, since the prior art expressly teaches a lower limit of tungsten content, namely at least 44 wt.% tungsten, that is above the upper limit required by the present invention, the reference teaches away from the present invention in a material respect, and itself overcomes any prima facie case of obviousness that may have been asserted.

It seems the only suggestion or motivation for varying the tungsten content out of the disclosed prior art range and into the presently claimed inventive range comes from the Examiner's hindsight understanding and reconstruction of the present invention. It is not proper to evaluate the situation from the point of view knowing what the invention is and then saying "Oh, that's obvious", but rather the Examiner must demonstrate a suggestion or motivation in the prior art (without any knowledge of the invention) at the time the invention was made, that a person of ordinary skill would have proceeded with a tungsten content out of the prior art range and in the presently claimed range.

For the above reasons, the Examiner is respectfully requested to withdraw the rejection of claims 1, 4 and 10 as obvious over JP '698.

- 7) Referring to section 4 on pages 3 to 4 of the Office Action, the rejection of claim 16 as obvious over JP 10-286845 (JP '845) in view of one of the references JP '698 or JP '840 is respectfully traversed.

Claim 16 has been amended to recite a narrower range of the tungsten content in the nickel-tungsten alloy. Namely, claim 16 now recites a tungsten content of more than 20% by weight and less than 44% by weight of tungsten.

The Examiner admits that the JP '845 reference does not disclose a coating layer of a nickel-tungsten alloy having such a range of tungsten content. In this regard, the Examiner refers to JP '840 and JP '698. However, as discussed above, JP '840 and JP '698 both fail to disclose or make-obvious the presently claimed range of tungsten content. Since both JP '840 and JP '690 "miss the mark", a combination of JP '845 with JP '840 and JP '698 still "misses the mark", because the Examiner admitted that JP '845 does not disclose the presently claimed tungsten content range (and JP '845 does not suggest anything pertinent about the tungsten content).

For these reasons, even a combination of all three references would not have suggested the presently claimed limited tungsten content range. As discussed above, the references actually teach away from the presently claimed range by expressly limiting the prior art ranges to end points that do not overlap

at all with the presently claimed ranges. Also, the tungsten content has not been shown to be a result-effective variable, and the Examiner has shown no prior art motivation or suggestion to proceed contrary to the range limitations taught by the prior art references. The Examiner cannot use hindsight gained from the present application, and cannot use the claim as a blueprint to pick and choose features of the prior art to reconstruct the claimed invention.

For the above reasons, the Examiner is respectfully requested to withdraw the rejection of claim 16 as obvious over JP '845 in view of JP '698 and/or JP '840.

- 8) The new claims recite additional features that further distinguish the invention over the prior art, for example as follows.

Claim 17 depends from independent claim 16, and recites a narrower tungsten content range, namely at least 21% by wt. and at most 43% by wt. This establishes a distinct gap between the prior art ranges and the presently claimed range.

Claim 18 further depends from claim 17 and recites a still-lower upper limit of tungsten content, namely at most 40% by wt. The Examiner has apparently recognized the significance of this gap as a distinction from the higher tungsten content of JP '698, because claims 9 and 11 reciting this limitation have not been rejected in view of JP '698.

Claim 19 further depends from claim 18 and recites that the coating layer has a thickness of 1 to 20 μm , similar to original claim 4, which had been rejected based on JP '698, but not JP

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'840. Thus, claim 19 combines a feature that had not been rejected based on JP '840 with a feature that had not been rejected based on JP '698.

Claims 20 and 21 each recite the coating layer thickness limitation similar to claim 4, but now depending from claim 1 through claim 9, and from claim 10 through claim 11. Thus, claims 20 and 21 also cover a combination of a feature that had not been rejected based on JP '698 with a feature that had not been rejected based on JP '840.

Claim 22 recites a lower limit of at least 21% by weight of the tungsten in the binary alloy, depending from claim 11. This gap between the upper limit disclosed by JP '840 and the lower limit of the claimed range further emphasizes the patentable distinction.

- 9) Favorable reconsideration and allowance of the application, including all present claims 1 and 4 to 22, are respectfully requested.

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